IBM

Safeway and IBM partnership provides rapid implementation for supply chain solution

Safeway plc

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Timeline

September 1997	Safeway and IBM discuss supply chain management solution.
October 1997	IBM presents its architectural design to Safeway.
October 1997	Development begins.
December 1997	Initial development phase completed. SIS goes live with two suppliers.
Mid 1998	16 key suppliers using SIS along with another 11 suppliers of fresh produce.
December 1998	ROI of 100% exceeded.
Early 2000	Over 80% of all Safeway suppliers using SIS. Development iterations continue.

Overview

Safeway Stores plc is one of the UK's leading food retailers. Based in Hayes, Middlesex, the company employs around 90,000 staff and owns more than 500 stores across Britain. Its stores are clustered together into small regional groups. The stores in each group work together to decide on the stock to be made available on the shelves and also to develop promotional offers within the region. Centrally, Safeway sets a target of 100% availability of its products on the shelves—not in the backs of trucks or in store rooms. The need to keep track of product availability within this devolved structure places significant demands on the supply chain.

Over the years, Safeway has had some difficulties with its suppliers, most of which arose from an inability to predict accurately the demand for individual products—especially if there was some kind of promotion within a region. Stores were finding that demand could rise by as much as 1000% during some promotions and the suppliers were not meeting these demands. The suppliers were demanding better information so that they could improve their service levels but Safeway was wary of giving away data that it perceived to be sensitive and of high value.

Back in 1997, Safeway took a long hard look at itself and came to the conclusion that whilst it was a leader in the exploitation of technology there were new areas that had to be considered. A decision was taken to leverage its assets and through innovative use of the new Network Computing technology run their systems with greater efficiency and effectiveness. Amongst the changes that were planned was a new supply chain management solution, known as the Supplier Information System (SIS).

In partnership with IBM, Safeway developed and implemented the first iteration of SIS within 12 weeks. This iteration was made available to a small number of trusted suppliers who contributed to the further development of the solution. Over a period of two years the development has continued and more than 80% of Safeway's suppliers are now using the system. The result for Safeway has been a considerable reduction in costs caused by wastage and storage and an improvement in product availability for customers. At the same time, improved co-operation between suppliers and stores has enhanced promotion management and attracted more customers with obvious financial benefits.

This case study documents the nature of the Safeway Supplier Information System and the relationship between Safeway and IBM.

The Supply Chain Problem

As one of the leading UK supermarkets, Safeway continuously faces the problem of attracting customers to its stores. Competition from other supermarkets is strong and so quality of service, product range and availability are key differentiators, especially when coupled with the innovative use of promotions. This means having the right products on the shelves at the right times and ensuring that there is adequate stock available to meet forecasted demand. As Brian Keating, Director of SIS at Safeway, puts it, "The focus is on product and price—especially the provision of fresh food and ensuring service availability." In this case, availability refers to having products on the shelves when the customers want them. Poor availability results in immediate loss of revenue and, potentially, damages the reputation of the store. At the same time, promotions provide an incentive for customers to come into the stores where they rarely buy just the products that are on special offer. "Promotions attract the cherry-pickers", says Keating, "but they also buy other things. Everyone likes a good deal."

Back in 1997, the dilemma that Safeway had was that its supply chain was not able to respond effectively to fluctuations in demand. At the heart of the issue was that Safeway felt very protective of the sales data originating from the EPOS (Electronic Point Of Sale) systems. The data generated was not made available freely to suppliers and anything that was provided was 'historical' in context, rather than an accurate view of current stock levels. This meant that little control could be exerted over stock levels and that the only

Fig. 1: Everything starts at the point of sale

way to ensure high availability on the shelves was to over-order, with resulting costs in storage and wastage. This problem would be highlighted with promotions where demand for the products on offer could increase by as much as 1000%. Forecasting this demand was proving to be extremely difficult and suppliers were unable to respond to the needs of the stores.

Safeway has been investing heavily in its systems. The initiatives have covered a broad spectrum of business functions, from its ABC loyalty card system through to innovative self-service functions such as PDA-driven scanning (using handheld personal digital assistants) and the Easi-Order system for remote ordering. In order to meet Safeway's service goals, Brian Keating decided that the problems that existed within the supply chain needed to be addressed. Keating had some ideas about a collaborative approach to inventory management and he looked to share them with the IBM Safeway account team.

The Safeway/IBM Partnership

Safeway is a long-standing customer of IBM having made significant investments in IBM software and hardware within its IT infrastructure. As a result of this, a strong relationship has developed between the two businesses so that they meet regularly to discuss ideas and to consider forthcoming development plans within the Safeway business. These discussions have allowed IBM to build an extremely good understanding of how Safeway wishes to progress and allows them to make suggestions regarding the best use of technology.

Within Safeway, there are three priorities for the use of technology. Brian Keating describes these as dial tone service levels and being an integral part of the business. "First of all, we must have our systems up and running 24 hours a day," he says. "Then we must understand the business drivers – not just ask what is required. We're not here just to automate and improve. We want to enable the business to do things differently."

IBM and Safeway have worked together on a number of the developments that have characterised the store chain's drive towards technology leadership over its main competitors. This has created an atmosphere of trust between the two businesses and IBM is now a preferred partner for Safeway. When the SIS project was being considered, IBM was beginning to raise the issues of the Network Computer and Pervasive Computing. At the same time, Safeway was looking to keep its technology simple with little diversification. This means that, for the purposes of this project, Safeway did not feel the need to go through an extensive supplier evaluation. Instead, Safeway simply sat down with the IBM account team and explained the problem that it was trying to solve.

Within a few weeks, IBM technicians came up with a blueprint for a solution that Safeway accepted and a team was constructed from both organisations. Brian Keating explains, "Safeway presented IBM with a business problem. We provided the business input and let them worry about the technical issues. This approach kept the management of the project simple whilst allowing IBM to exploit the technology to its fullest extent."

The Solution

The Supplier Information System (SIS) uses IBM's pervasive computing technologies as a basis for opening up the store's data to suppliers. During normal daily operations, Safeway stores keep a constant track of products—deliveries received and sales through the point of sale terminals. The function of SIS is to provide suppliers with access to this information and to enable analysis of stock movements so that stock levels can be managed more efficiently. Suppliers are also permitted to view the forward projections of stock requirements.

Everything starts at the point of sale where customer purchases are recorded on IBM 4694 EPOS terminals. This information feeds directly into systems that monitor

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inventory levels and provide forecasting and analysis functions. It is from here that stock replenishment requirements can be established. A second function is the prediction of likely demand for promotional activities. This is achieved by combining real-time demand figures with historical data in order to arrive at an accurate prediction of customer buying patterns. The results of this activity are stored in an IBM DB2 data warehouse running on IBM S/390 servers with IBM CICS messaging.

A major benefit that SIS provides is real-time access to the information held within the data warehouse for both suppliers and Safeway personnel. SIS uses Java-based principles to provide easy access to the information through the Internet. Suppliers are able to view the data relating to their own products in a variety of different ways—by store and depot etc.. The information is obtained by selecting the details through a standard Web browser. The selections are formatted into SQL requests for the database and the results are formatted into Web pages using IBM Net.Data. The resulting pages of information include graphs, tables and data formatted in a way that can be downloaded into the suppliers' own systems.

The whole environment is protected by user identities and passwords that are encrypted and transmitted across a secure network. Additional transmission and firewall security came from IBM Global Network and database security is provided by IBM RACF.

The data-sharing capabilities of SIS introduces the concept of collaboration between Safeway and its suppliers. Safeway does not carry out national promotions but, instead, allows individual regions (or groups of stores) to develop their own promotions and manage the associated stock holdings. For example, Safeway may have several regions organising various local promotions with a duration of one week rather than having a nationwide event of four weeks. The environment allows suggestions to be received and approved very quickly, for resource checks to be carried out and for promotional material to be prepared in a much shorter space of time than was possible previously. The system also takes into account the fact that having a promotional event targeting a few items will at the same time, almost inevitably, generate increases in other product sales.

One of the issues that arises when a large-scale database is opened up to suppliers is the need to ensure that service delivery remains at the highest levels. This is much harder with Internet technology where there are many factors outside the control of both Safeway and supplier. In order to address this, Safeway has implemented a Tivoli management solution to carry out end-to-end response time measurements. As Brian Keating said, "With Tivoli, IBM was best positioned to provide an end-to-end service for SIS."

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- Brian Keating

Managing the Project

The entire SIS project was managed in a very devolved manner. Safeway presented the business issues to IBM who went away and came back with a design and implementation plan. Safeway had little interest in the technological issues as long as their business imperatives were going to be met. Once the design was approved, a similar approach was taken to the development. IBM Global Services carried out the development in collaboration with Safeway personnel, whose role was to ensure that things were going as expected.

Working in this way was beneficial all-round because IBM came up with a design that it knew would work and was left to implement it. This meant that the first prototype solution was available in a remarkable 12 weeks. Commenting to The Financial Times, IBM Client Executive Brian Jones said, "Brian Keating and I were in a restaurant together when he shared his ideas of genuinely co-operative inventory management. Colleagues from IBM's software business architected the solution with real products from our scrawl and we brought in Net.Data and Java resources. They sat in Safeway for eight weeks and wrote the code with some help from the Safeway project team." One contributor to this rapid development was the fact that Safeway had, somehow, managed to get left

behind by the client/server revolution. Thus, its systems were already server-centric, data was centrally managed and it was relatively easy to apply IBM's e-business model to the problem. Safeway has long used the S/390 platform and has developed systems that are simple, scaleable, manageable and reliable. The IBM design kept things simple and allowed Safeway to exploit their infrastructure to the fullest degree, whilst providing the business with the system that it required.

With the first prototype ready, Safeway set about conducting trials with a select group of suppliers. From an initial short list of suppliers, Safeway started out with two and gave them access to the store data. These suppliers provided much needed feedback to make SIS more usable. They also made suggestions for further developments and enhancements. This created a collaborative atmosphere between Safeway and its suppliers that has remained in place ever since. Slowly, more suppliers were added and the feedback process continued. Two years into the project and Safeway now has more than 80% of its suppliers using SIS, who together compose an even higher proportion of the overall business.
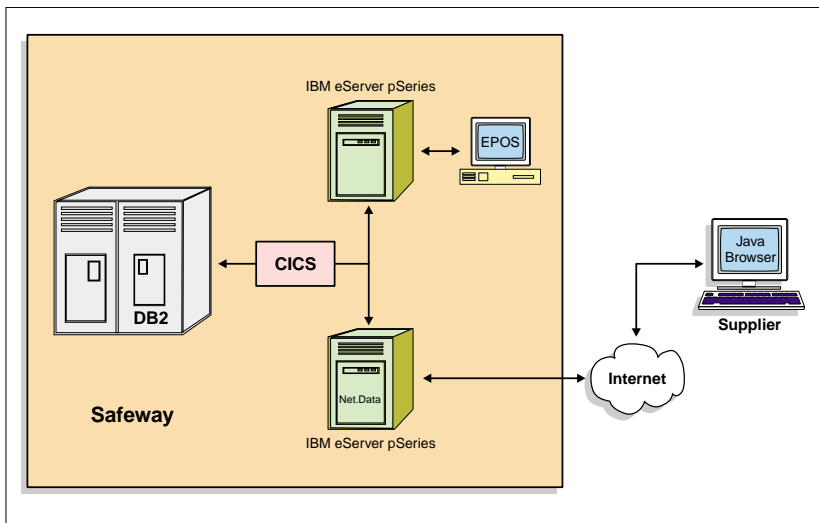

Fig. 2: Architecture of SIS

New Ways of Working

Throughout all of its recent IT developments Safeway has hung onto the philosophy that it can be more competitive by being different. This means that it has been developing new business practices and new techniques that allow it to move away from the accepted approaches to running supermarkets. Perhaps the best example of this is the innovative use of hand scanners within stores so that customers can complete most of the effort associated with the checkout as the basket is filled. The result is shorter queues and happier customers.

With SIS, the customer is not the only direct beneficiary as Safeway's ability to provide improved stock availability advances the overall quality of service. Other major beneficiaries are both Safeway and the suppliers, many of whom have been able to use SIS as a lever to introduce more efficient and cost-effective ways of working. With SIS, Safeway has created a flexible supply chain management solution where it can collaborate with its suppliers to ensure that shelves are always stocked without unnecessary wastage and storage costs. A significant extra business benefit is that customers are now less likely to leave the store without an item that they required.

It is the collaborative nature of SIS that has proved to be the greatest success. Safeway had always guarded its sales and stock data jealously, with the view that it should be the only organisation to take advantage of it. "Suppliers were telling Safeway that they could be more proactive if they had access to the data and knew what was being planned," says Keating. "At the same time, the policy of local promotional campaigns was putting extra pressure on the supply chain." SIS required a leap of faith from Safeway to accept that it needed to share its information with the suppliers in order to enable its regionalized store structure to function efficiently.

SIS creates and end-to-end management capability for the supply chain where sales data is available to both Safeway personnel and suppliers within a few seconds. This allows comparison between actual events and forecasts that have been derived from the historical information held within the data warehouse. By making the information available to both suppliers and stores, it is possible for either party to identify potential stock shortages and to take appropriate remedial action. Thus, a supplier can see that a store is selling a product more quickly than expected and can arrange an additional delivery to ensure that shelves remain stocked. In effect the whole supply chain is made more flexible.

The collaboration extends further to the handling of promotions where stores and suppliers work together to develop the promotions. This is carried out over a period of one or two weeks where, previously, it could take up to 12 weeks. It is during promotions that SIS provides key information about expected volumes and actual sales. The fast availability of data ensures that sudden changes in demand can be seen and reactions planned quickly.

The combination of the ability to manage local promotions more efficiently and for suppliers and Safeway to manage the associated stock levels effectively has encouraged stores to now undertake promotions in bakery, delicatessen and dairy products. This would have been impossible with the old supply chain because of the very short shelf life of such items.

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Business Benefits

The benefits of SIS can be viewed from three different perspectives. Firstly, there are the gains that have been made by Safeway. Secondly, it is possible to look at the benefits to the suppliers and, finally, there are the improvements that are experienced by Safeway's customers.

Ultimately, the whole purpose of SIS has been to ensure the quality of service to Safeway customers, which, in turn, increases the level of sales. Since the introduction of SIS, Safeway has measured a 5% improvement in supplier service levels. This means that fewer sales are being lost through stock unavailability and Safeway's profitability has increased well beyond expectations. This improvement in service levels can be partly attributed to a 10% improvement in promotional forecasting that has reduced the need for rapid reaction to high-demand situations.

Clearly, if Safeway is selling more products then the suppliers must also be doing well. This is always good news because it provides the justification and the impetus to expand the idea further. The suppliers have developed much improved working relationships with Safeway where they are included within Safeway's business processes. The suppliers are able to make suggestions for stock handling, supply chain improvements, new products and promotions. Suppliers are happy that SIS allows them to react quickly to situations within individual stores and that the whole supply chain is simply faster. At the same time, the supply chain has benefited from better forecasting and timely data. This has allowed them to see actual demand figures and also to reduce their own inventory levels with consequent reductions in capital outlay.

Safeway has noted that some of its suppliers have reorganised their own teams in response to the introduction of SIS. Brian Keating points out, "They are assessing their own business processes, as are Safeway, and we are working together to come up with a genuinely collaborative supply chain solution."

Safeway itself has invested more than half a million pounds (US$ 750,000) in SIS over the first two years of its life. This is a figure that it has recouped many times over—both in terms of increased sales but also as a result of reduced costs. The majority of these savings have come from cutting out the wastage and storage costs that follow on from over ordering to ensure availability for customers. In the first year of the SIS trial, Safeway calculated that it saved in the region of £700,000 (approximately US$1 million) in these 'interface' costs. This was achieved with only a small number of suppliers so the benefits being experienced now will be even greater.

The final benefit is aesthetic and is perhaps best explained by Brian Keating. He says, "The supply chain is working better. You can tell this because the goods on the shelves look better and the presentation of the fresh produce area is better."

Fig. 3: "…the goods on the shelves look better and the presentation of the fresh produce area is better"

Lessons Learned

Safeway has learned at least one very important lesson from the SIS project: the sharing of information with the supply chain makes it much more efficient, results in better working relationships, improves customer service levels and ends up with improved profits all around. The emphasis is on profit because, although revenues have increased, SIS has ensured that there has been a corresponding reduction in the costs associated with poor supply chain management.

In addition to this powerful commercial lesson, Safeway has also taken a look at how it carries out such projects. It saved itself a considerable amount of time and cost by going straight to IBM as a trusted partner rather than completing a protracted tender process. Brian Keating points out, "We needed to keep things simple. Safeway had the business requirements and IBM had the technology. They went away and came back with an easy architecture that was implemented within 12 weeks. Who could have done better?" This approach has allowed Safeway to concentrate on what it knows best, managing a supermarket chain and providing good customer service.

Safeway was possibly fortunate in that it was not heavily reliant upon client/server technology and so the move towards the e-business model was made easier. At the same time, the move to a Web-based solution also meant that the perspective was changed somewhat. "We used to find that too much time was spent developing the user interface," explains Keating, "but with the Web we could stop worrying about how it looked. Everyone was already familiar with browsers and the Web."

Future Plans

SIS has continued to develop with a number of iterations since its first release at the end of 1997. There has been an ongoing process of refinement that has evolved as more suppliers have been added to the system. This process will continue into the future as Safeway seeks to bring the remaining suppliers into SIS. Safeway has stuck to the philosophy of simplicity to ensure that technology will not be an impediment to supplier acceptance of the system.

Safeway is in the process of adding a "Proof of Delivery" capability to the system, allowing suppliers to see if a delivery has taken place and, more importantly, how Safeway has recorded the delivery. For instance a supplier may have a planned delivery recorded within its own systems as being of, say, 1000 units. By checking with Safeway they can see if 1000 units were recorded as being delivered. This ability of the suppliers to see the stock in real time will produce great savings in administrative effort and hence costs. Additionally, by allowing both Safeway and the suppliers to see the same view of stock will help drive up even further the availabiltiy of products on the shelf.

Looking ahead, the flexibility that exists within SIS ensures that it can be applied to any supplier relationship that Safeway chooses to develop in the future. This means that SIS could be used by Safeway to develop new business areas and new retailing ideas as it sees opportunities. The suppliers also see the strength of SIS and are now demanding similar capabilities from other supermarket chains. This confirms Safeway's position as a leader in the use of technology—a target that it has achieved and intends to maintain with the support of IBM.

Keating thinks of the association that Safeway has with IBM as a partnership. "We don't buy IBM just because they are IBM; everything comes down to a commercial relationship. IBM expect that. I know that partnership is a much overused phrase. A true partnership comes from understanding each others requirements and should benefit both sides. I believe that we have a partnership with IBM."

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